Quick-rental® instruments
GENERAL ELECTRIC CO.
1200 KONA DRIVE
COMPTON, CA 90220
PHONE (213) 642-5350

MODEL 3-V

3Ø VARIABLE FREQUENCY OSCILLATOR

OPERATIONS AND SERVICE MANUAL

Electronic Services - Los Angeles
M13535X

PACIFIC

POWER SOURCE CORP.

MASTER

CERTIFICATION

Pacific Power Source certifies that this instrument was thoroughly tested and inspected and found to meet or excel its published specifications when it was shipped from the facility.

WARRANTY

Pacific Power Source warrants each unit to be free from defects in material and workmanship. For the period of two years after purchase, Pacific Power Source will repair or replace any unit returned to our plant in Huntington Beach, California, by the original buyer, with shipping both ways prepaid by the buyer. Pacific Power Source is not responsible for consequential damage arising from the use of its equipment.

MOD 1301

1.0 SCOPE

The mod is used on the model 3-V oscillator Plug-in for the purpose of bringing out ØB and ØC. This allows the building of 3 phase systems in the E-series line.

2.0 CONNECTOR PIN-OUT

Center pin ØC

2nd inner pin ØB

Outer conductor - ground

3.0 MATERIAL REQUIREMENTS

1.	RG-58/u Coax Cable 4 ft.	
2.	BNC Connector	2 ea Allied
3.	¼", 3 conductor phone plug "Plastic cap"	1 ea Allied
4.	3 conductor phone jack	1 ea Allied
5.	Nylon Shoulder Washer NY-37-030-N	1 ea Blinn
6.	1" square 7 mil nylon	
7.	6.81KΩ resistors 1% 1/8W	2 ea RN55C6811

4.0 OPERATION

4.1 Insert phone plug in jack in 3-V osc.

4.2 Attach BNC connector labeled ØB to 1-V osc on the ØB 110-E. Set 1-V to EXT range.

4.3 Attach BNC labeled ØC to 1-V osc on the ØC 110-E. Set 1-V to ext range.

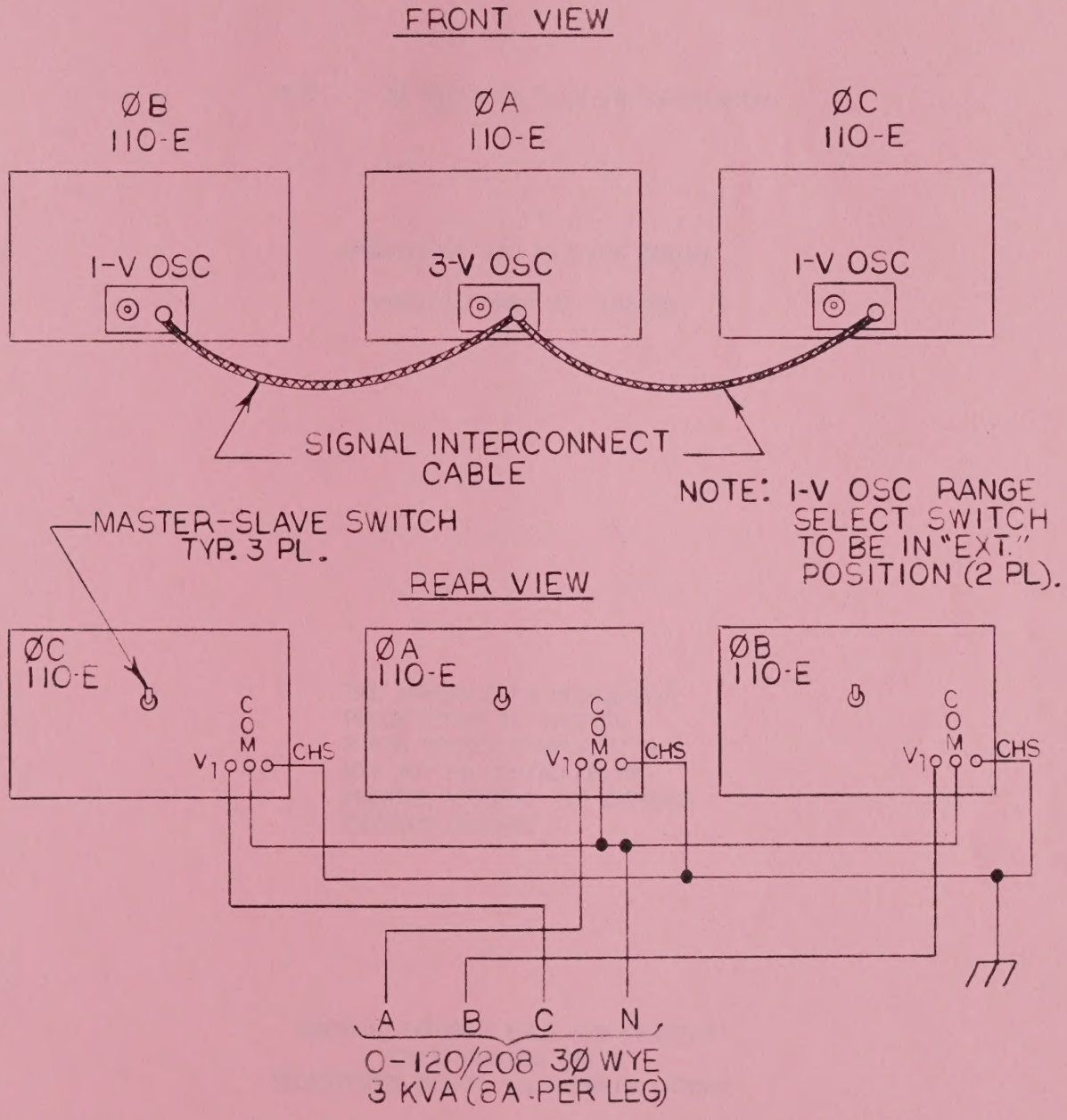
4.4 Wire all commons together, this becomes the Neutral terminal.

4.5 Pin V1 on each 110-E become the phase outputs.

5.0 INSTALLATION

5.1 Install output connector locate between meter select switch and amplitude control.

5.2 Change R26 and R32 from 28.7KΩW resistor to 6.81 1/8W 1% resistor.



DO NOT ATTACH PARALLELING CABLES BETWEEN J6 & J7.
MASTER-SLAVE SWITCH TO BE IN MASTER POSITION ON ALL CABINETS.

PACIFIC POWER SOURCE CORP.

DESCRIPTION

MOD 1301

DWN BY [signature] DATE 3-11-82

APPV'D BY [signature] ON 3/11/82

PPSC/DA PART NO. 1301 REV ~

3-V 3Ø VARIABLE PLUG-IN OSCILLATOR

OPERATIONS AND SERVICE MANUAL

PACIFIC PART NO. 108850

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PACIFIC POWER SOURCE CORPORATION
5312 SYSTEMS DRIVE
HUNTINGTON BEACH, CALIFORNIA 92649

1 FEB 1981

FIRST EDITION

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1.0 GENERAL DESCRIPTION

1.1 General Characteristics

The 3-V Plug-in Oscillator module is a variable frequency, three phase, sine wave oscillator. The 3-V module mates with Pacific Power Source's "K" series chassis.

1.2 Specifications

1.2.1 Frequency: Continuous 47-500 Hz
Dial accuracy: $\pm$ 2%
Stability: 0.25%

1.2.2 Output Amplitude: 0-125 VAC
Each output metered seperately line to neutral and switch selectable

1.2.3 Amplitude Control:

Master control varies all outputs 0 to full output, $\pm$ 10% trimpot adjust for the purpose of balancing ØB and ØC.

1.2.4 Metering: Output voltage, rotary switch selectable, A, B, C to Neutral.

1.2.5 Output Configuration: 3-Phase WYE Each phase separated by $120^{o} \pm 1^{o}$

2.0 THEORY OF OPERATION:

The 3-V Plug-in module is a 3-phase variable sine wave oscillator. The basic oscillator is a Wein bridge oscillator in the output amplitude is stabilized by a light bulb (L1). The level of oscillation is 5 VAC RMS (A1-Pin 6) R36 varies the frequency of the oscillator. The signal is then attenuated through R18 to a proper level. A2 is configured as an integrator and is used to form a 270° vector of the fundamental oscillator. This vector is inverted to produce a 90° vector. Through algebric summing these signals form 120° (ØB) and 240° (ØC) vectors. The power supply is a full bridge with storage capacitors. Solid state regulators are used to produce $\pm$ 12VDC. A3 and Q1 form a turn-on delay circuit.

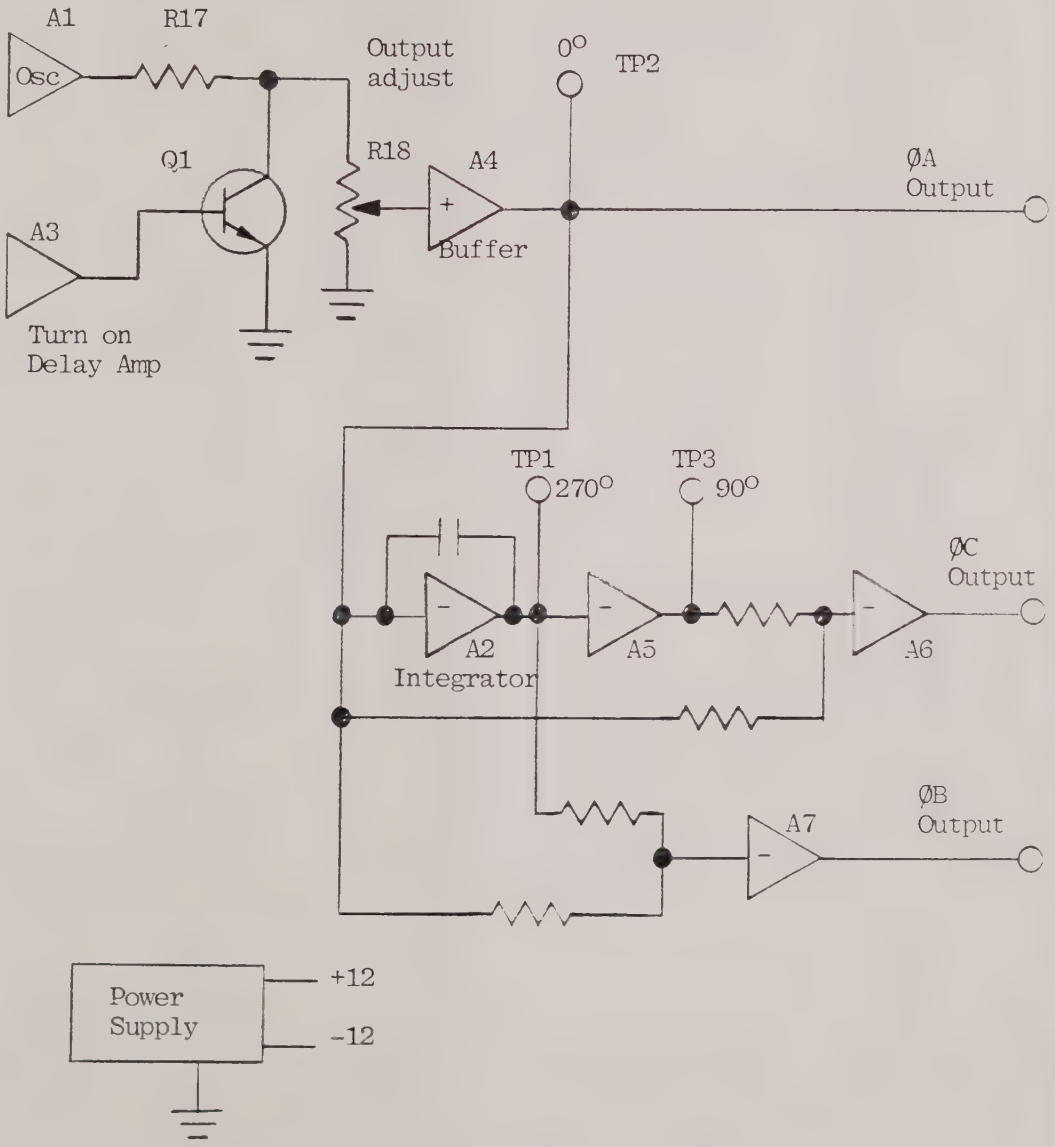
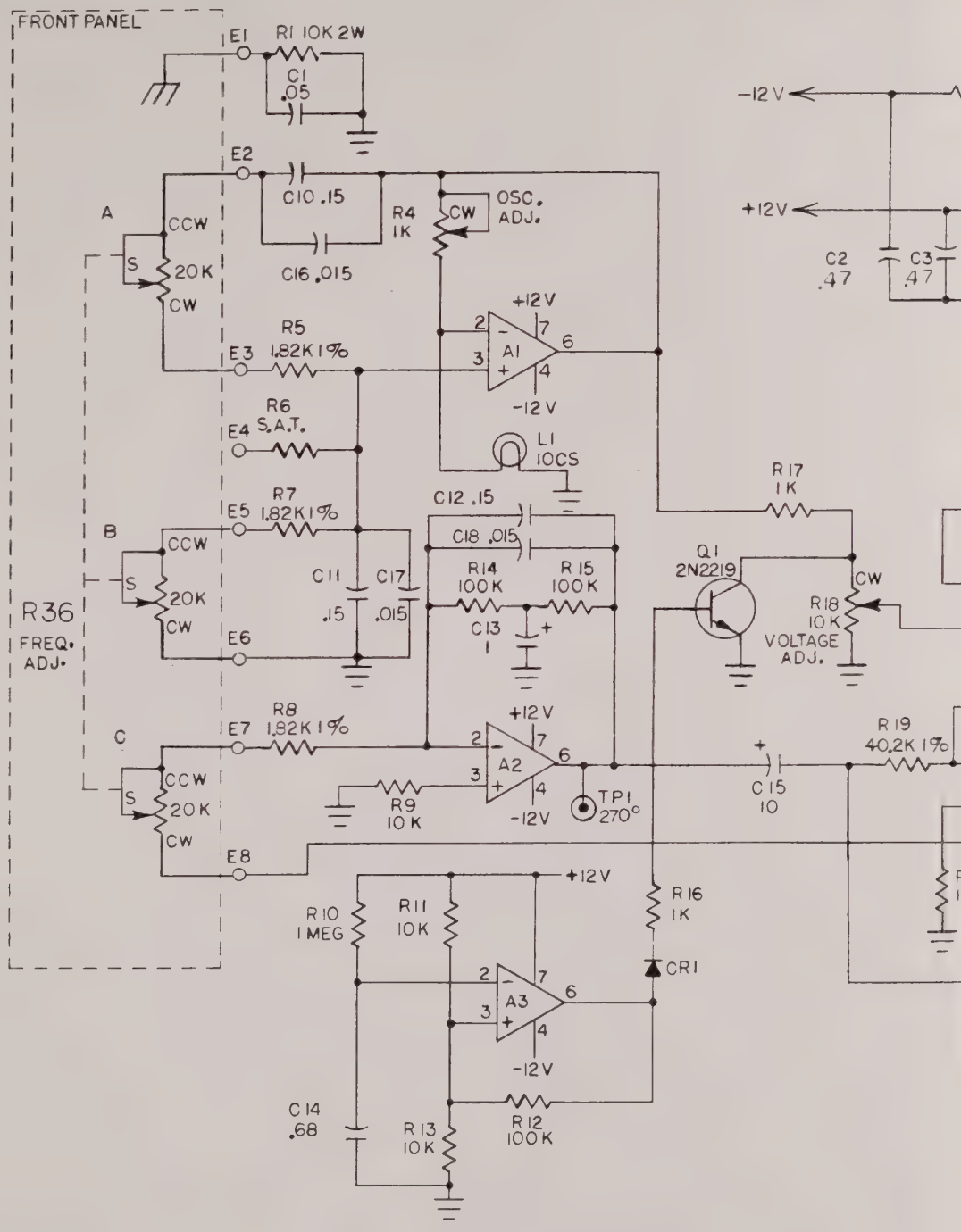


FIG. 1
BLOCK DIAGRAM, 3-V PLUG-IN



NOTES: UNLESS OTHERWISE SPECIFIED

1) ALL RESISTOR VALUES ARE GIVEN IN OHMS, 1/4 W, 5%.
2) ALL CAPACITOR VALUES IN MF.
3) ALL AMPLIFIERS ARE UA741C.

1081
1083

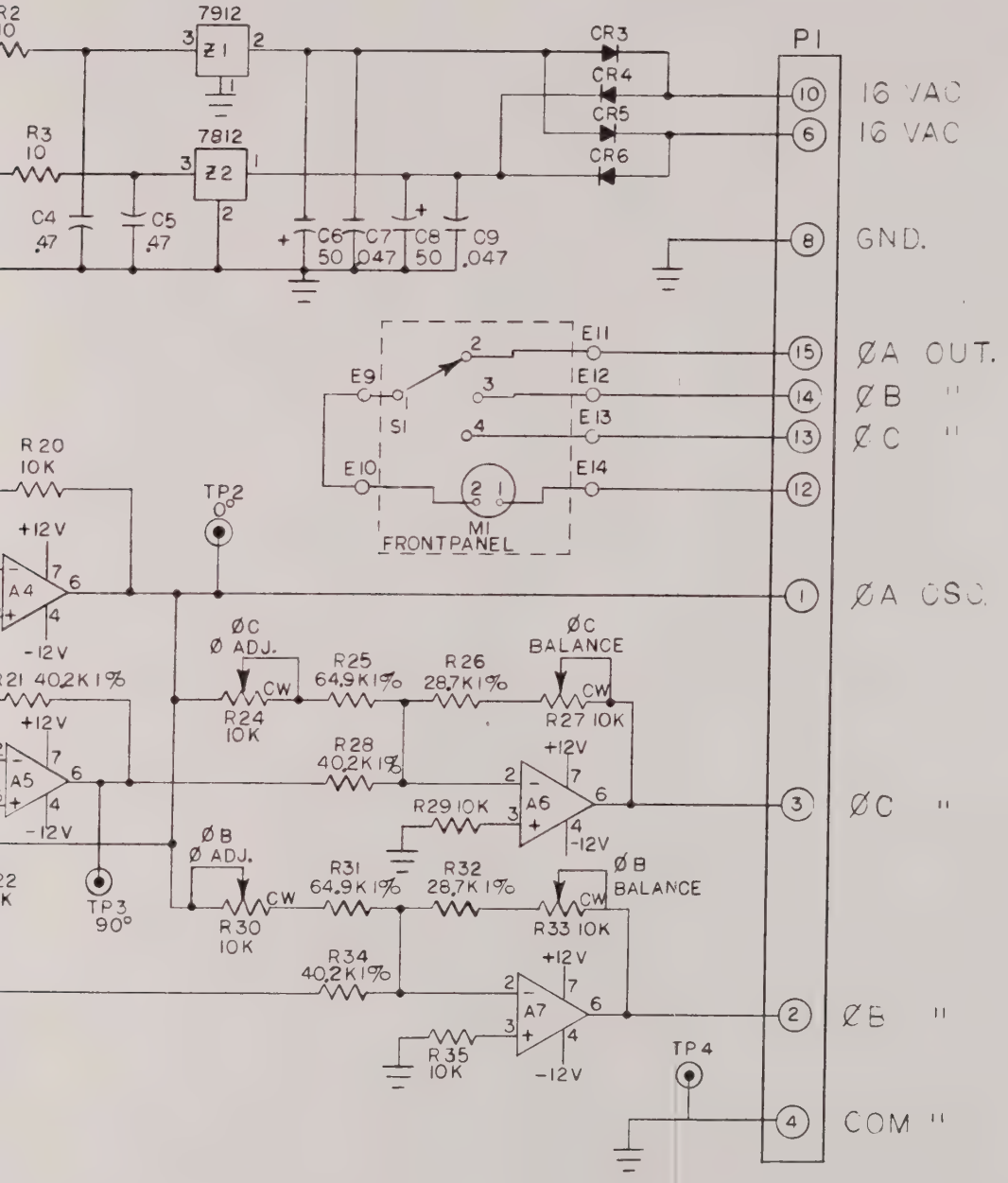
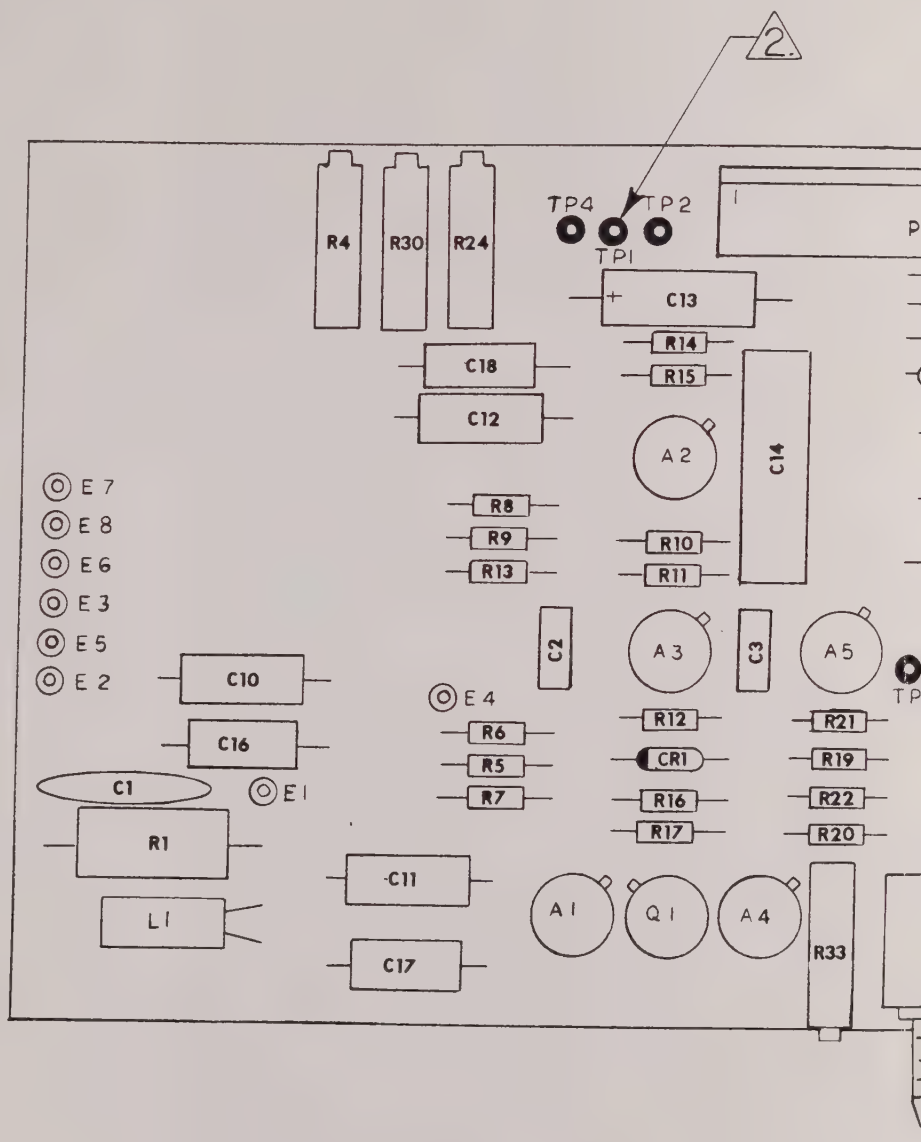


FIG. 2
SCHEMATIC, 3-V PLUG-IN

0-4	CHS-10	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: FRACTIONS · DECIMALS .XX ± .XXX ± ANGLES ±	CONTRACT NO	PACIFIC POWER SOURCE	
0-4	CHS-5	MATERIAL	APPROVALS / DATE	3-V PLUG-IN	
ASSY	USED ON	FINISH	DRAWN 7-1-80	SIZE C	FSCM NO.
APPLICATION		DO NOT SCALE DRAWING	CHECKED 7-1-80	DWG NO. 108860-2	REV A
			ISSUED	SCALE	SHEET 1 OF 1



2. TP1-4 (ITEM 36) TO BE SWAGED INTO PLACE PRIOR TO SOLDERING.

1. JUMPERS TO BE 22 AWG SOLID COPPER BUSS WIRE (ITEM 38).

NOTES: UNLESS SPECIFIED OTHERWISE

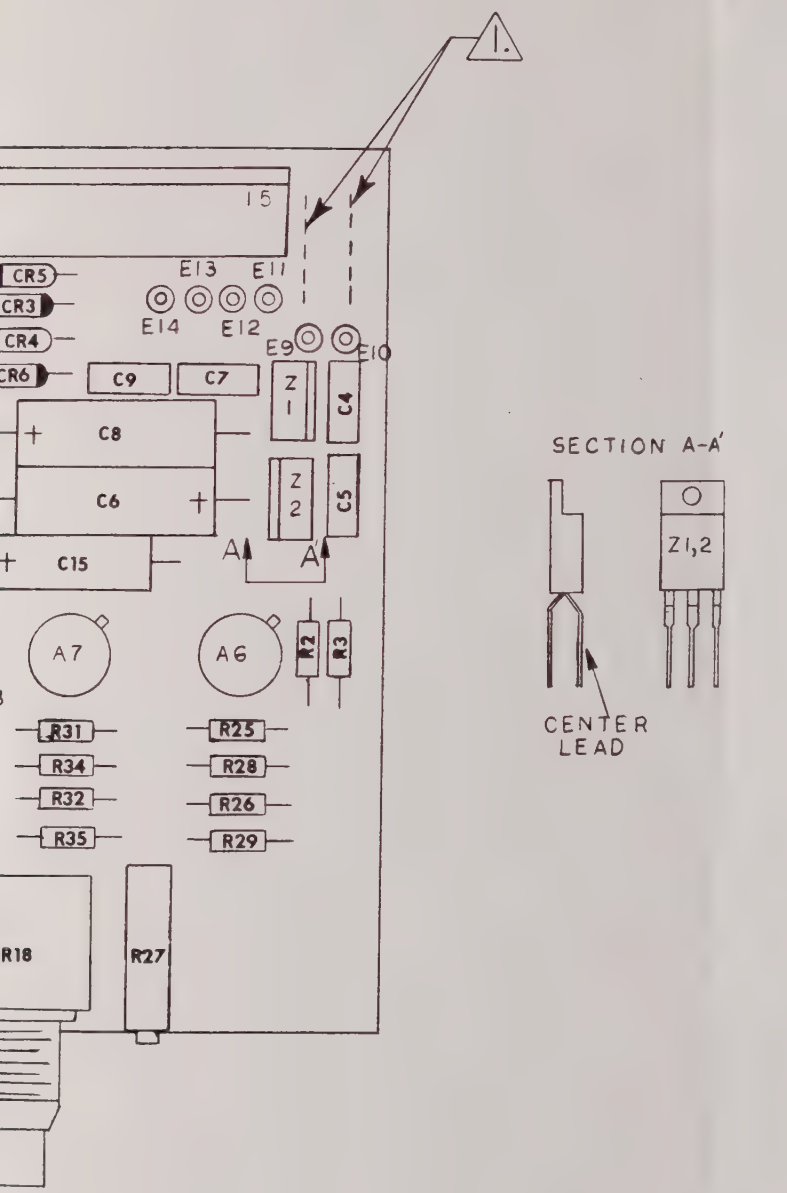


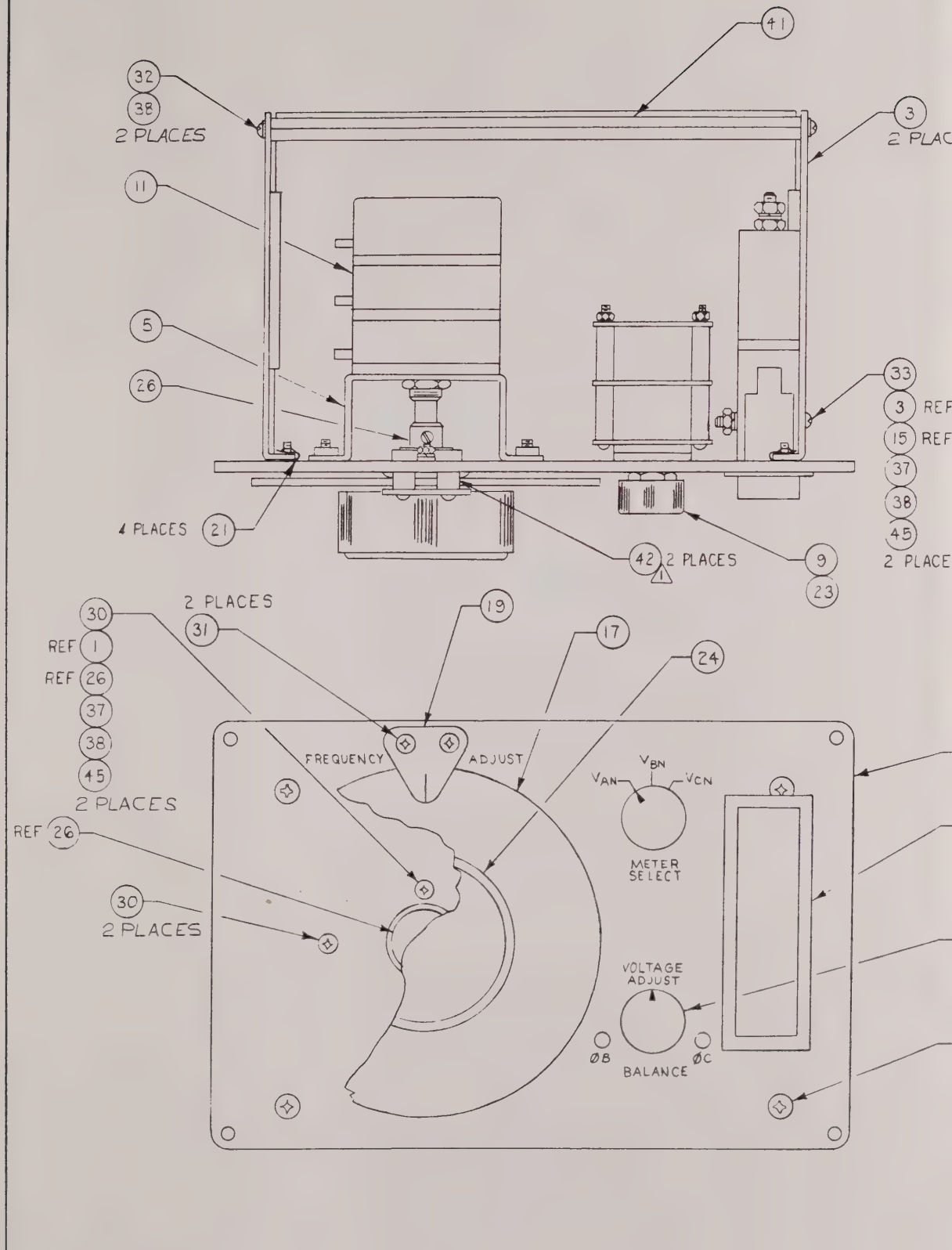
FIG. 3
ASSEMBLY DRAWING,
3-V PLUG-IN PCB

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES . XX- .XXX- :	CONTRACT NO.	PACIFIC POWER SOURCE
MATERIAL SEE DWG. NO. 108860-4	APPROVALS / DRAWN / CHECKED / ISSUED — DATE: 7-1-80	3-V PLUG-IN
FINISH		SIZE C · FSCM NO. · DWG. NO. 108860-1 · REV. A
DO NOT SCALE DRAWING		SCALE 2:1 · SHEET 1 OF 1

PARTS LIST

ITEM	DESCRIPTION	MFG P/N	MFG	QTY
	Printed Wiring Board	108860	PPSC	1
	Operational Amplifier A1-A7	LM741C	National	7
	Transistor Q1	2N2219		1
	Capacitor, .047 uf/50V C7, 9	2CZ5U473D8050C4	Sprague	2
	Capacitor, .47 uf/50V C2, 3, 4, 5	2CZ50474D80500C4	Sprague	4
	Capacitor, .05 uf/500V C1	5GA-S50	Sprague	1
	Capacitor, .15 uf/100V C10, 11, 12	730B1B154-J	Electro-Cube	3
	Capacitor, .68 uf/50V C14	75F6R5-684	G.E.	1
	Capacitor, 50 uf/50V C6, 8	TE1209	Sprague	2
	Capacitor, 10 uf/50V C13, 15	TE1204	Sprague	1
	Capacitor, 1 uf C13	5CZU105X0050C5	Sprague	1
	Diode CR1, 3-6	1N4005	Motorola	5
	Connector P1	09-65-1151	Molex	1
	Potentiometer, 10K R18	81B1D824A15	Bourns	1
	Potentiometer, 10K R24, 30, 27, 33	3009P-103	Bourns	4
	Potentiometer, 1K R4	3009P-102	Bourns	1
	Regulator, +12V Z2	MC7812CT	Motorola	1
	Regulator, -12V Z1	MC7912CT	Motorola	1

ITEM	DESCRIPTION	MFG P/N	MFG	QTY
	Resistor, 10 ¼W 5% R2, 3			2
	Resistor, 1K ¼W, 5% R16, 17			2
	Resistor, 10K ¼W 5% R9, 11, 13, 20, 22, 29, 35			7
	Resistor, 100K ¼W 5% R12, 14, 15			3
	Resistor, 1.0 M, ¼W 5% R10			1
	Resistor, 10K, 2W 5% R1			1
	Resistor, 1.82K, 1/8W, 1% R5, 7, 8	RN55C1821		3
	Resistor, 28.7K 1/8W 1% R26, 32	RN55C2872		2
	Resistor, 40.2K 1/8W 1% R19, 21, 28, 34	RN55C4022		4
	Resistor, 64.9K, 1/8W, 1% R25, 31	RN55C6492		2
	Capacitor, .015 ufd/100V C16, 17, 18	730B1B153J	Electro cube	3
	Test Points TP1,2,3,4	1280B	Useco	4
	Lamp L1	10CS	Sylvania	1
	Wire, #22 AWG Copper			A/R



⚠ SWAGE ITEM 42 IN PLACE PRIOR TO ASSY.

NOTES: UNLESS SPECIFIED OTHERWISE

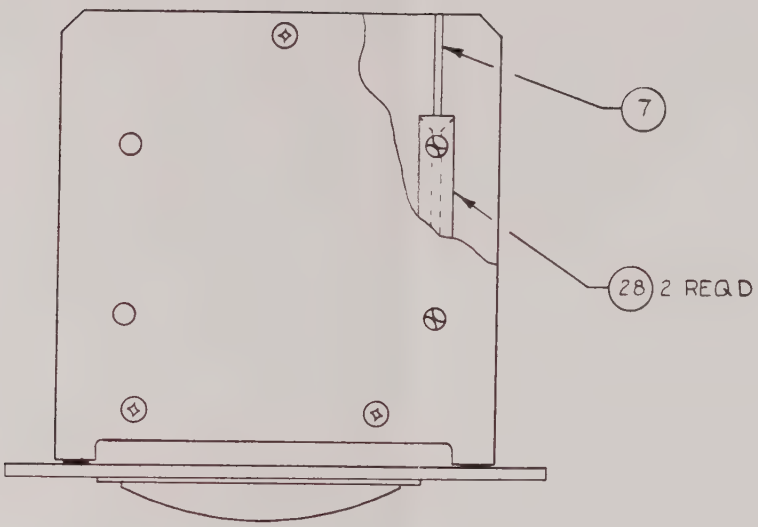


FIG. 4
ASSEMBLY DRAWING
3-V PLUG-IN TOP ASSEMBLY

(1)

(15)

REF (1) REF (7)
(23) (43)

(34) 4 PLACES

CONTRACT NO		PACIFIC POWER SOURCE	
APPROVALS	DATE	3-V PLUG-IN MODULE ASSEMBLY DRAWING	
DRAWN C.RANDALL	7-1-80		
CHECKED	7-1-80	SIZE C	FSCM NO.
ISSUED		DWG. NO. 108800-1	REV. A
		SCALE NONE	SHEET 1 OF 1

ITEM	DESCRIPTION	MFG P/N	MFG	QTY
1	Front Panel	108801	PPSC	1
3	Side Panel	108402	PPSC	2
5	Pot Bracket	108802	PPSC	1
7	Printed Wiring Board Assy.	108860	PPSC	1
9	Switch	399429K	OAK	1
11	Potentiometer, 20K-3Gang	1630-20K/20K/20K	Duncan	1
15	Meter	122-163-2-15D	Weston	1
17	Dial	580021	PPSC	1
19	Dial Index	DE-1	Jan Hdwr.	1
21	Speed Nut	C1996-632-24	Tinnerman	4
23	Knob	Kn-701-A-$\frac{1}{4}$	Alco	2
24	Knob	RB67-4M-M	Rogan	1
26	Ratio Drive	23-20000-1	Ailtech	1
28	Card Guide	1250-F	SAE	2
30	Screw, 4-40 x $\frac{1}{2}$			4
31	Screw, 4-40 x $\frac{1}{4}$			2
32	Screw, 4-40 x 3/8			2
33	Screw, 4-40 x 1			2
34	Screw, 6-32 x $\frac{1}{2}$			4
37	Washer, Flat #4			4
38	Washer, Split lock #4			6
41	Spacer	108304	PPSC	1
42	Spacer, 4-40 x 3/16, Swage	A-1533-C-3/16	Useco	2
43	Lug	1497	H.H. Smith	1
45	Hex Nut, 4-40			4

3.0 TROUBLESHOOTING GUIDE

SYMPTOM	CHECK
1. No Output ØA, ØB, ØC	a) Insure P1 and J1 are mated properly.
	b) Set output voltage control fully clockwise.
	c) Check output of A1 (Pin 6) for sine wave.
	d) Check collector of Q1 for sine wave.
	e) Check A3 (Output should be low)
	f) Check output of A4 (Pin 6)
	g) Check power supply voltages
2. No Output, ØB	a) A7 if required
3. No Output, ØC	a) A5 or A6 replace as required.
4. No Output ØB and ØC	a) A2, replace as required.